

1792A
EA-00-24
Lost Creek

July 5, 2000

Concerned Citizen,

The McKenzie Resource Area of the Eugene District Bureau of Land Management has completed the Environmental Assessment for the Lost Creek Analysis Area.

You have expressed an interest in receiving copies of Environmental Assessments for district projects. Enclosed is a copy of the Environmental Assessment for your review and any comments. Public notice of this action is being published in the Eugene Register Guard on July 5, 2000. The public comment period will end on July 26, 2000. If you have any questions concerning this proposal, please feel free to call Don Wilbur at 683-6994.

Comments, including names and street addresses of respondents, will be available for public review at the district office, 2890 Chad Drive, Eugene, Oregon during regular business hours (7:45 a.m. to 4:15 p.m.), Monday through Friday, except holidays, and may be published as part of the EA or other related documents. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

Sincerely,

Emily Rice, Field Manager
McKenzie Resource Area

Enclosure

LOST CREEK ANALYSIS AREA

McKenzie Resource Area BLM Eugene District

ENVIRONMENTAL ASSESSMENT

Environmental Assessment No. OR 090-EA-00- 24

1.0 PURPOSE OF AND NEED FOR ACTION

1.1 Introduction

In March 1999 the Lost Creek Analysis Area Environmental Assessment (EA), OR 090-98-20, was released for public review. A Decision Record was signed May 3, 1999 to implement the “Snag Creations” and “Flood Project” portion of the EA. However, **no decision** was reached on the (1) proposed roads to be decommissioned, and (2) proposed timber harvesting. Since that time, protocol surveys have been completed and additional analysis regarding Survey and Manage/Protection Buffer species has been conducted. This document incorporates the most current information regarding the species found within the revised proposed project areas.

The Bureau of Land Management (BLM) proposes to implement forest management activities in the Lost Creek Watershed Analysis Area. The proposed projects would occur within Matrix Lands as designated in the Record of Decision for the Northwest Forest Plan Environmental Impact Statement (SEIS/ROD) pp. 7. The area of analysis for purposes of this environmental document is approximately 15 miles southeast of Eugene, near the town of Dexter, Oregon. It includes Rattlesnake, Lost, Middle, and Anthony Creeks totaling approximately **3,000** acres in size.

BLM manages **13,768** acres (39 percent) of the Lost Creek Watershed Analysis area, the U.S. Forest Service manages **685** acres, and the remaining lands are private.

1.2 PURPOSE AND NEED

The proposed harvest activities and road activities are located in: T. 19 S., R. 2 W.; T. 19 S., R. 1 W.; T. 20 S., R. 2 W.; and T. 20 S., R. 1 W.; of the Willamette Meridian.

The purpose of this action is to:

- C Harvest merchantable timber to help meet the Eugene District Probable Sale Quantity (PSQ).
- C Increase the productivity of General Forest Management Area (GFMA) lands by thinning overstocked stands.
- C Construct temporary roads for timber harvest, improve roads to be needed in the future.

The need for harvest action is established in the Eugene District Record of Decision and Resource Management Plan, which directs that timber be harvested from Matrix lands to provide a sustainable supply of timber. The need for the road improvement action, and road decommissioning actions are established in the Northwest Forest Plan (B-9 thru B-34) which directs that Aquatic Conservation Strategy Objectives be met.

1.3 Conformance

This EA is tiered to the *Record of Decision (ROD) for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl*, April 1994, and the *Eugene District Record of Decision and Resource Management Plan (RMP)*, June 1995. Actions described in this EA are in conformance with the Aquatic Conservation Strategy (ACS) Objectives listed on page B-11 of the Northwest Forest Plan (NFP), and in **Appendix E** of this EA. The RMP makes land use allocations and allows for density management thinning in the Connectivity LUA, and thinning and regeneration harvest in the General Forest Management LUA to acquire desired vegetative and structural characteristics needed to attain ACS objectives. These documents are available for review at the Eugene District Office of the BLM, Eugene, Oregon.

The Analysis File contains additional information used by the interdisciplinary team (IDT) to analyze impacts and alternatives and is hereby incorporated by reference.

Plan maintenance documentation postponing surveys for seven Component 2 and Protection Buffer species was recently completed ("Plan Maintenance Documentation, USDI Bureau of Land Management, To Change the Implementation Schedule for Survey and Manage and Protection Buffer Species," approved March 13, 2000). This plan maintenance delays the survey requirements because these 7 fungi species may require 5 or more years of surveys to have a high likelihood of locating sites occupied by the species and, therefore, have feasibility problems for completion of pre-project surveys. In lieu of these multi-year surveys, "single season" survey protocols have been developed for these 7 species, and such surveys have been conducted for this project. Thus, the Proposed Action and alternatives are in conformance with the direction provided in the Plan Maintenance Documentation. The implementation of the plan maintenance is provided for by BLM planning regulations (43 CFR 1610.5-4).

The effect of the plan maintenance action was analyzed in an Environmental Assessment (EA), "To Change the Implementation Schedule for Survey and Manage and Protection Buffer Species," issued

October 7, 1998 (“Schedule Change EA”). The analysis contained in the Schedule Change EA is incorporated into this document by reference.

Additional site-specific information is available in the Lost Creek Timber Sale project analysis file. This file and the above referenced documents are available for review at the Eugene District Office. The Schedule Change EA and Plan Maintenance Documentation are also available for review on the internet at <http://www.or.blm.gov/nwfp.htm>.

1.4 Monitoring

Monitoring guidelines are established in the 1995 RMP/ROD, Appendix D, and the 1994 Northwest Forest Plan Standards and Guidelines, pp. E-1 to E-10.

1.5 Scoping

The scoping process identified both agency and public concerns relating to the proposed projects, and defined the issues and alternatives that would be examined in detail in the EA. The public was informed of the planned EA through letters to those on the Resource Area’s mailing list, and to those receiving the *Eugene District Planning Update*.

Two public scoping meetings were held: one on January 7, 1998, and the other on March 3, 1998. A field trip was also conducted for interested parties on April 9, 1998. There were 16 comment letters or phone conversations from the public that identified issues or concerns. A copy of the scoping mailing list, and the public identified issues are in the Analysis File.

1.6 Issues

Scoping by the IDT and public input identified the following **four** issues:

1. What would be the effect of harvesting and road management on the timing and magnitude of peak flow?
2. What would be the effect of harvesting and road management activities on erosion and sediment delivery to water bodies?
3. What would be the impacts of harvesting activities on a Northern spotted owl nest site within 1/4 mile to a harvest area?
4. What would be the impacts of harvesting and road management activities on the Spotted Owl Critical Habitat Unit? (Proposed Harvest Areas 2, 3, and 4 are in the Critical Habitat Unit).

1.7 Issues Identified But Eliminated From Detailed Analysis

1. The issue of how the Proposed Action and alternatives would impact Survey and Manage Species was not analyzed because impacts are not expected to exceed those anticipated in the Schedule Change EA (“Plan Maintenance Documentation, USDI Bureau of Land Management, to Change the Implementation Schedule for Survey and Manage and Protection Buffer Species,” approved March 13, 2000). All Survey and Manage Component 2 species (wildlife and botany) were surveyed to current protocols in the proposed harvest areas. Documented sites would be managed using the most current management recommendations for each species. Sites for these species would not be directly, indirectly, or cumulatively affected by the proposed action. Therefore, these species are not analyzed in this document. “**Appendix A**” under the title “Design Features for Survey and Manage Species Common to All Action Alternatives” (pg. 28), summarizes management recommendations for Survey and Manage species that would be followed under the proposed action.
2. An issue about harvesting timber adjacent to 200+ year old stands was eliminated from analysis because Harvest Area No. 2 received a red tree vole (RTV) buffer. The RTV buffer would provide a minimum of 100 feet between the thinning and the 200 year old stand; therefore, this is not an issue. Another proposed harvest area located in T. 20 S., R. 1 W., Section 17 is adjacent to another 200+ year old stand; however, that harvest area has been deferred.
3. An issue of harvesting 80+ year old stands on the remaining 80+ year old stand network and late-successional species was considered. The “15% Late-Successional Compliance, Assessment, and Determination” process for the Lost Creek watershed was completed in December 1998. This assessment identified late-successional forest patches for retention in the watershed where little late-successional forest persists. All Federal lands within the watershed that were identified as having conifer trees 80+ years old were reviewed for their contribution to the late-successional condition of the watershed. An estimated 1,859 acres of BLM and 123 acres of Forest Service lands were identified as stands in suitable conditions to meet the 15% Federal land requirement. There are no stands proposed for harvest that have been identified as being 80+ years old and, therefore, have no impact on the total amount of older forest on Federal lands.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

This section describes alternatives identified by the IDT, alternatives eliminated from detailed study, and comparison of alternatives. Design features associated with these alternatives and detailed information can be found in the **Appendix A**.

2.1 *Alternative I - Proposed Action*

The proposed action is described below. Refer to **Appendix A** for Project Design Features, **Appendix B** for Harvest Area Details, **Appendix C** for Road Construction and Closure Summary, and **Appendix D** for maps of proposed harvest areas.

2.1.1 Timber Harvest Activity in the Matrix

This alternative consists of one regeneration harvest area (15 acres) and seven thinning harvest areas (176 acres). All perennial nonfish-bearing streams retain the interim Riparian Reserve width of one site potential tree height (180 feet slope distance) on each side of the stream channels. All fish-bearing streams retain the interim Riparian Reserve width of two site potential tree heights (360 feet slope distance) on each side of the stream channels. Intermittent streams retain the interim Riparian Reserve width of one site potential tree height (180 feet slope distance) on each side of the stream channel. Wetlands of less than one acre in size would be buffered to the extent of the riparian vegetation.

Ground based logging systems would be used on approximately 119 acres (62%) of the total 191 acres. Operational restrictions and mitigation measures would be applied on all acres operated with ground based machines to help achieve the goal of insignificant growth loss effects from compaction (2% or less of any treated harvest area compacted after amelioration practices) as per the Eugene District RMP/ROD pp. 37 (see Appendix A for specific design features that address ground based yarding).

Harvest Areas 1 & 9 were deferred from harvest because Survey and Manage species had a high rate of occurrence that no longer made feasible Harvest Areas.

The table below summarizes the type of harvest, affected Land Use Allocation (LUA), and affected acres for the Proposed Action.

TYPE HARVEST	LAND USE ALLOCATION	ACRES	Regen Harvest Acres (Skyline)	Regen Harvest Acres (Grnd)	Thinning Harvest Acres (Skyline)	Thinning Harvest Acres (Grnd)	Volume (MBF)
Regeneration	Matrix	15	9	6			420
Thinning	Matrix	176			60	116	2,420
	TOTAL	191				TOTAL	2,840

Regen - Regeneration Harvest

MBF - Thousand Board Feet

Grnd - Ground based Yarding

Skyline - Cable Yarding

2.1.3 Roads

An estimated 0.86 mile of temporary dirt road has been proposed for construction. These temporary roads would be decommissioned (0.86 mile) after harvest activities have been completed (see **Appendix C** for summary of culvert work, road improvement, road construction, and road decommissioning; see **Appendix A** for Best Management Practices and Design Features for road construction, and decommissioning).

An estimated 2.36 miles of road would be improved. These roads are needed for future management and are either unstable and/or have inadequate drainage.

Road 19-1-31.1A would have 0.27 mile improved. Work would include replacing one culvert, brushing, roadway shaping, and drainage establishment.

Road 20-2-1.0A would require 0.64 mile of improvement. This would consist of replacing a failing log culvert that is under 30 feet of fill, replacing an undersized culvert, and five new cross drain culverts where there is inadequate drainage.

Roads 20-2-2.1.0D, 20-2-2.1E, and 19-2-13.0G, would have 1.45 miles of improvement work consisting of replacing 4 old culverts and installing 4 new culverts (sized for 100 year flood potential). It would also need roadway shaping, brushing and placement of crushed aggregate to restore drainage and control sedimentation concerns.

Dirt Road Constr. (Miles)	Dirt Road Decom. (Miles)	Rock Road Constr. (Miles)	Road improve. (Miles)	Road improve. and Decom. (Miles)	Net increase roads (Miles)
0.86	0.86	0	2.36	0	0

Decom. - Decommission: Roads to be blocked and treated as necessary to restore hydrologic functions after completion of timber sale contract. Roads would be closed and not require future maintenance.

2.2 *Alternative II - No Action*

2.2.1 Timber Harvest Activity in the Matrix

No timber harvest would occur within the Lost Creek Analysis Area at this time. Meeting the District's decadal PSQ volume commitment would have to be accomplished from other areas. There would be no increase in the productivity of Matrix lands by thinning overstocked stands.

2.2.2 Roads

Under this alternative, no temporary road construction or improvements on the existing road system would occur.

2.3 *Alternatives Eliminated From Detailed Study*

An accumulation of Survey and Manage sites discoveries, timing of surveys, and lack of access to areas because of an abundance of Riparian Reserve areas, limited the Interdisciplinary Team to only one feasible action alternative.

1. An alternative was considered that would have included an estimated 40 more acres of

regeneration and 29 more acres of thinning than the proposed action. This alternative was eliminated because extensive stream dissection rendered proposed Harvest Areas too small to be practical, or made logging systems difficult to execute (T. 20 S., R. 1 E. Section 3).

2. An area located in T. 20 S., R. 1 W., Section 5 had an abundance of Riparian Reserves resulting in a potential 5 acre harvest area. To access the five acres, a road would have to be constructed. Because the area was small and required a road to access it, the harvest area was deferred from harvest.
3. Another alternative involved seven Riparian Reserve areas identified as needing thinning. These areas were deferred because surveys for Survey & Manage species could not be accomplished.
4. The original proposal encompassed the entire Lost Creek Watershed as the analysis area, with the proposed action involving approximately 800 acres of proposed harvest with two action alternatives. However, over 230 acres of proposed harvest areas are deferred because many Survey & Manage species were found and protected with required buffers that often overlap or block access to proposed harvest areas. Another 430 acres are deferred until surveys can be conducted for Survey & Manage species.

2.4 *Comparison of Alternatives*

ELEMENTS	ALTERNATIVE I PROPOSED ACTION	ALTERNATIVE II NO ACTION
Regeneration Harvest Acres	15	None
Thinning Harvest Acres	176	None
TOTAL ACRES HARVESTED	191	None
Miles of Temporary road construction	0.86	None
Net Miles of road improvement	2.36	None
Acres logged by ground based equipment	119	None
Acres logged by cable	62	None

3.0 AFFECTED ENVIRONMENTS

This section describes key components of the existing environment. The plants and animals do not differ significantly from those discussed in Chapter 3 RMP, 1994.

3.1 Vegetation

Douglas-fir and Western hemlock are the dominant forest trees in the project area. The elevations for the proposed Lost Creek harvest areas range from 800 feet to 2,500 feet. The project areas are dominated by second growth conifer stands with age designations between 50-70 years. These mid-aged stands have a forest structure classified as “stem exclusion.” Stem exclusion is characterized by high numbers of trees per acre with little or no understory trees or vegetation. Early logging usually left large down logs on the site because they were considered non-merchantable due to utilization standards at the time. Currently, these old logs are functioning as advanced decay structure for wildlife.

Associated conifer species are Western red cedar, incense cedar, grand fir, and Pacific yew. The common hardwoods are red alder, bigleaf maple, black cottonwood, Pacific dogwood, Pacific madrone, Pacific yew, chinquapin, bitter cherry, and willow. Shrubs in the region may include associations of vine maple, rhododendron, California hazel, ocean spray, red huckleberry, and poison oak. Frequently occurring vascular plants include salal, swordfern, vanilla leaf, Oregon grape, whipplevine, oxalis, and redwood violet.

Stands proposed for treatment have all had some level of harvest in the past. That level of harvest may have been clear cutting, selective cutting, or salvage harvesting. Natural regeneration, from seed trees left on-site or nearby stands, initiated new stands with uneven or patchy stocking, and a range of tree ages. Subsequent management practices such as pre-commercial and commercial thinning have attempted to develop uniform stands to full stocking levels.

3.2 Threatened and Endangered Wildlife

Bald Eagle (Threatened) - Suitable nesting habitat for bald eagles is mature forest within one mile of a lake, river, or major tributary. There is no suitable habitat for bald eagles within or adjacent to the project area. This species will not be analyzed in this document.

Northern Spotted Owl (Threatened) - There are 40 acres of suitable habitat and 151 acres of dispersal habitat in areas proposed for harvest in the action alternative. There are two spotted owl activity centers and an Unmapped Late-Successional Reserve (LSR) within 0.25 mile of the proposed harvest areas. The Unmapped LSR was originally designated around a spotted owl activity center that subsequently moved in 1996. Annual surveys have documented repeated nesting in this new activity center. The other activity center has also had documented nesting owls.

Northern Spotted Owl Critical Habitat Units were designated by the U.S. Fish & Wildlife Service (USFWS) as an interim measure to provide habitat for Northern spotted owls until a recovery plan or management plan addressing Northern spotted owl habitat is adopted. Sixty-eight acres of proposed harvest areas fall within Critical Habitat Unit OR-20. This Critical Habitat Unit consists of a total of approximately 78,425 acres of BLM and Forest Service lands. Approximately 10,060 acres of this Critical Habitat Unit is within BLM ownership. Approximately 2,200 acres of these lands are currently suitable nesting habitat and 2,600 acres are currently dispersal habitat.

3.3 Survey and Manage

The Northwest Forest Plan contains guidelines to manage old growth associated species and produce a sustainable level of timber. It provides standards and guidelines to provide benefits to amphibians, mammals, bryophytes, mollusks, vascular plants, fungi, lichens, and arthropods that are assumed to be old growth associated species. The standards and guidelines contain four components, plus protection buffer species, each with different priorities and species to which they apply (see Table C-3 in the Northwest Forest Plan). Components 1, 2, and Protection buffer lists apply to the individual projects. Surveys for Component 3 and 4 species are being done at the regional level and do not apply to individual projects. The Eugene District is required to manage known sites of the species on the Component 1 list. Surveys for these species are not required, but some sites of these species were found incidentally during other surveys. When a Component 1 species is found, the site is managed using the current management recommendations that apply to the species. Component 2 species require surveys prior to ground disturbing activities and management of known sites. Protection buffer species are surveyed prior to ground disturbing activities and managed according to the management recommendations that apply to that species. A pre-field review was completed as required, followed by field surveys where needed, based on species range and habitat. The required surveys for Survey and Manage species have been completed using current protocols.

Component 2 Wildlife

All proposed timber sale Harvest Areas are suitable habitat for the red tree vole (*Arborimus longicaudus*), Blue-gray tail-dropper (*Prophysaon coeruleum*), Papillose tail-dropper (*Prophysaon dubium*), and Oregon megomphix (*Megomphix hemphilli*). All Harvest Areas were surveyed using current protocols for these species and all four of these species were documented within proposed harvest areas. Documented sites would be managed by establishing buffers around all confirmed sites as required by the current management recommendations (Appendix A). No timber harvest activities or road construction activities would be allowed within the boundaries of the established buffers for these sites.

Fungi (Component 2 and Protection Buffer Species)

All of the proposed timber sale areas are suitable habitat for *Sarcosoma mexicana* and *Otidea onotica*. Proposed harvest areas were surveyed using current protocols. Sites of both species were documented within the proposed harvest areas. For more detailed information on number of sites refer to the EA file available at the Eugene District Office. Documented sites would be managed by establishing buffers around all confirmed sites as required by the current management recommendations (See Appendix A). No ground disturbing activities would be allowed within the boundaries of the established buffers for these sites.

Fungi (Component 1)

Management recommendations for Component 1 fungi species (*Phaeocollybia* sp., *Ramaria* sp.

and *Sarcosoma latahense*) require protection that prevents disturbance to the duff and litter layers, retains the host trees, and minimizes change to the microclimate. Current research information indicates that a one site tree no-entry buffer around the location provides this protection. Surveys were not conducted for these species; known sites were incidental finds during the course of other surveys such as Component 2 fungi and mollusks.

Helvella compressa (Component 1) is considered by the taxon leads to be more common than thought at the time the Northwest Forest Plan was written, and is a candidate for removal from the list of species of special concern. This species is commonly found in disturbed non-forested habitats, such as urban gardens, and is not an old growth associated species. At this time, management of known sites to maintain species viability is still required. Thirty-seven sites of *Helvella compressa* were found incidentally during the course of other surveys across the Lost Creek watershed; two of these sites are located within the proposed action. Thirty-five sites are not within the proposed action and occur in Riparian Reserves and other withdrawn areas. The two sites within the proposed action have buffers (see **Appendix A** for Design Features).

Bryophytes

Management recommendations for *Ulota megalospora* (Protection Buffer Moss) do not require buffers or reserves as the species is not disjunct or localized, occurring across the Eugene District and Pacific Northwest. Its presence in Riparian Reserves and administratively withdrawn areas provides sufficient protection.

3.4 Soils

The Lost Creek Watershed is within an area formed millions of years ago from the volcanism of the Cascade Range to the east. Large quantities of water lain tuff were deposited, interbedded with flows of breccia, andesite, and basalt. Differential erosion of these varied materials has produced many of the topographic features found in the watershed.

Prevalent in the Lost Creek area are the softer tuffaceous deposits that were easily weathered, producing gentle slopes and clay loam soils having shallow A horizons that are easily compacted, clay-rich, and erode with concentrated surface water flows.

All areas proposed for harvest are classified as having High or Moderate Soil Resiliency (Lost Creek Watershed Analysis, 3/97). The High Resiliency soils occur on approximately 85 percent of the acres to be treated. These soils are moderately deep to deep with less than 35 percent coarse fragments. They have high levels of organic matter, nutrients, and plant available water. Textures are loam, clay loam, or silty clay loams. Because the soils are productive, these sites can sustain some manipulation and still maintain nutrient capital, inherent physical and chemical capabilities, and natural rates of erosion. In turn, these soils have a high potential for vegetative recovery. Their high soil strength also makes them resistant to erosion, even when vegetation is removed. However, because of high clay contents, permeability of the soils is easily impeded. Once saturated or compacted, water quickly concentrates at the surface, easily eroding the fine textured soils and

transporting them readily in runoff water.

Soils of Moderate Resiliency occur on approximately 15 percent of the acres to be treated. These soils are deep and moderately deep with greater than 35 percent coarse fragments. They tend to occur on the steeper slopes. These soils/sites have intermediate nutrient status and plant available water. Additional mitigation measures are typically utilized to reduce surface disturbance on these soils (see Design Features, Appendix A).

All soils having low productivity/Low Resiliency would be excluded from harvest areas. Generally these soils are shallow with high coarse fragment content, and are often associated with rock outcrops or dry meadows. These soils are classified as Fragile and, therefore, not suitable for harvest activities. All hydric soils/wetlands were also withdrawn from harvest areas due to their fragile character.

3.5 Water Quality

The Lost Creek Watershed is approximately 55 square miles in size. Lost Creek is a 6th order stream, flowing at predominantly a low gradient (<3 percent). Lost Creek and its tributaries discharge to the Middle Fork of the Willamette River about 3 miles downstream from Dexter Reservoir. Natural stream flow within the watershed reflects the seasonal precipitation pattern, with low flows occurring in the summer and highest flows occurring in the winter. Stream flow response to precipitation in forested watersheds involves a variety of processes affected by climatological conditions, topography, soils, vegetation, and land uses. Annual precipitation within the watershed ranges from 48 to 66 inches, falling mostly as rain. Although the majority of precipitation falls as rain, the critical hydrologic events, from an erosion standpoint, are dominated by snow.

Roughly 25 percent of the land in the Lost Creek Watershed is located in the transient snow zone between 2,130 - 2,810 feet in elevation. Shallow snow packs in this zone may yield meltwater quickly during warm or rainy periods, which can result in higher rates of water input to soil than would commonly result from rainfall alone.

Closed or dense canopies may intercept some of the direct precipitation by absorption and protect an accumulated snow pack from rapid melting. Of the BLM lands in the transient snow zone of this watershed, 94 percent are hydrologically mature with a dense canopy closure; about 6 percent have intermediate hydrologic maturity with a less than dense crown closure but where interception would occur; and 0.1 percent are considered to be hydrologically immature where canopy interception of precipitation would not occur. There is incomplete data on the condition of forest stands on private land, which also intercept precipitation and influence the amount of runoff in the basin.

Identified beneficial uses of water within the watershed are: water supply, irrigation and livestock watering, anadromous fish passage, salmonid fish rearing and spawning, resident fish and aquatic life, wildlife and hunting, fishing, water contact recreation, and aesthetic quality. According to records in the Lost Creek Watershed Analysis (March 1997), there are four water rights for domestic water supply, four permits for industrial water supply, 51 permits for irrigation, four permits for agriculture and livestock watering, and two permits for fish and wildlife in the watershed.

3.6 Fisheries

The Lost Creek Watershed provides habitat for both resident and anadromous fish. Resident fish include cutthroat trout, rainbow trout, speckled dace, western brook lamprey, and various sculpin

species. Cutthroat trout and sculpins are widely distributed throughout the basin and can be found in most streams with gradients <17 percent. Rainbow trout are restricted to streams having gradients <7 percent. Dace and lamprey use the low gradient channels (<3 percent).

Anadromous fish include winter steelhead trout and spring chinook salmon. Steelhead use most of Lost Creek and the lower reaches of Wagner, Anthony, Middle, Carr, Gosage, and Guiley creeks where gradients are <7 percent. Spring chinook salmon would use only the first 10 miles of the Lost Creek mainstem and possibly lower Anthony Creek where gradients are <3 percent. However, little suitable habitat exists today. Spring chinook salmon are listed as a threatened species under the Endangered Species Act. Lost Creek is designated critical habitat for spring chinook salmon. Salmon usually spawn in September when access to spawning grounds is sometimes blocked by low flows at the mouth of Lost Creek. The basin does not have a salmon run, but during recent high water years a few individuals have been observed.

Fish habitat in the Lost Creek Watershed is limited due to problems associated with high water temperature, seasonal low water levels, and lack of habitat complexity. Some of these problems can be attributed to low amounts of large wood in fish-bearing streams, and limited recruitment potential from adjacent riparian areas. There are no fish bearing streams associated with the proposed harvest areas.

3.7 Transportation System

A system of arterial, collector, and local roads allows travel to various parts of the watershed. Arterial and collector roads form the backbone of the transportation system. These roads are needed to access Federal, State, local government, and private land. The open road density on BLM managed lands within the analysis area is approximately 3.9 mi./sq. mi.

In the Lost Creek Watershed, there are approximately 216 miles of road. Forty percent of the roads within the analysis area are located on BLM land. Of the total land area in this analysis area, approximately 36 percent is controlled by BLM, 47 percent is controlled by large timber companies under reciprocal rights-of-way agreements, and 17 percent is controlled by other landowners or local governments.

The majority of the roads in the analysis area are crushed aggregate surfaced timber haul routes. The road grades change throughout the system, ranging from 0 to 16 percent. Many of the unsurfaced or old roads are in some stage of hydrologic recovery.

4.0 ENVIRONMENTAL CONSEQUENCES

This incorporates the analysis of cumulative effects in the USDA, Forest Service and the USDI, Bureau of Land Management *Final Supplemental Environmental Impact Statement on Management of*

Habitat for Late-Successional and Old-Growth Related Species Within the Range of the Northern Spotted Owl, February 1994, (Chapters 3 & 4) and in the Eugene District Proposed RMP/EIS, November, 1994 (Chapter 4). These documents analyze most cumulative effects of timber harvest and other related management activities. The following analysis has a cumulative effects section that supplements those analyzed in the above documents, and provides site-specific information and analysis particular to the alternatives considered here.

4.1 Alternative 1 - Proposed Action

4.1.1 Issue #1 - What are the effects of harvesting activities and road management on the timing and magnitude of Peak Flow?

Peak flow is defined as the highest instantaneous rate of streamflow attributable to a particular rainfall or snowmelt event. This specifically concerns the following actions:

- Timber harvesting on proposed harvest areas 6, 8, and 10 (97 acres) within the transient snow zone.
- Planned road construction and road restoration work in the project area.

Direct and Indirect Effects

Direct effects include timber harvesting, and temporary road construction, but the impact of these activities on the size of peak flows is difficult to predict and measure. The delivery rate of water to the forest floor and streams is influenced by changes in interception, fog drip, transpiration, snow accumulation, and snow melt resulting from canopy alterations and roads.

Most research on hydrologic response to timber harvesting has been conducted in clear cuts where little or no streamside timber was left behind, and mid-slope roads and compacted skid roads delivered run-off directly into adjacent streams. This research has indicated that, although smaller peak flows may have been increased by clear cut harvesting, major run-off events were impacted very little (Harr 1976). The effect of regeneration harvesting or commercial thinning conducted under the standards of the Northwest Forest Plan on stream flows has not yet been extensively studied. Current standard practices include establishing RR adjacent to all surface water features, constructing roads with an adequate number of cross drains, and decommissioning roads not needed after harvesting activities. With these standard practices in place today, any effects to stream flow from harvesting or road construction are likely to be negligible and short-lived.

Ken Carlson, Beak Consultants, calculated the peak rain-on-snow zone for the McKenzie Watershed using local data. This rain-on-snow zone is estimated to be from 2,130 to 2,810 feet in elevation. For the Lost Creek Watershed, this elevation band fits the zone where relatively shallow snow packs have been found to accumulate in the watershed. These shallow snow packs can be prone to rapid melting during winter rain storms, resulting in higher rates of water input to soil than would commonly result from rainfall alone.

Although higher rates of water input to soil occur after clear cut harvesting, current research has not

shown conclusively that removal of the forest canopy within the transient snow zone increases the rate of snowmelt during rainfall sufficiently to increase peak stream flows (Harr 1986). Timber harvesting may result in more saturated soil conditions, but there is no data to indicate that the run-off would reach the stream system, particularly with riparian buffers established that are consistent with Northwest Forest Plan guidance.

Under this alternative, no regeneration harvest would occur within the transient snow zone, as harvest area No. 7 is completely within the rain dominated zone. The 87 acres of commercial thinning proposed in the transient snow zone is not expected to alter the forest canopy to the extent that it would affect the amount of water input to soil, or the amount of run-off.

Utilizing temporary roads for harvesting activities, followed by decommissioning, would protect streams from long-term road related run-off (Harvest Areas 6 & 10). Adding cross drains on existing permanent roads where needed (Rd. Nos. 20-2-1, and 19-2-13 in Harvest Area No. 6) would reduce some road related run-off.

Therefore, the combination of temporary road construction, road repair, decommissioning, and use of the Standards & Guidelines for timber harvesting is expected to result in an overall reduction of run-off reaching the stream system during winter storm events. As a result, the timing and magnitude of in-stream flows would be maintained or restored to a more natural condition, and the intent of ACS Objective 6 would be met.

Indirect effects include the growth of young forests in the area regeneration harvested. New tree growth would result in gradual canopy closure, and any changes in hydrologic processes, as a result of timber harvesting, would gradually diminish over time.

Cumulative Effects

As a result of timber harvesting, the percentage of BLM lands in the Lost Creek Watershed considered to be hydrologically immature in the transient snow zone would remain the same (0.1 percent). Since Riparian Reserves would be established adjacent to all springs, wetlands, and streams, any increase in water input to soil may be intercepted by the intact vegetation remaining in the wide RR. Improving drainage conditions of the permanent road system within the project area would reduce the amount of road related run-off currently entering the stream system. This would result in an improved condition of the watershed.

Future harvesting of areas currently deferred may change the percentage of hydrologically immature BLM lands in the transient snow zone to 0.8%. No measurable changes to peak flows is anticipated because 1) wide Riparian Reserves are established, 2) permanent roads used for harvest would be upgraded if necessary to reduce road related run-off, and 3) roads no longer needed would be closed.

Future harvesting on private lands is difficult to predict. Based on current conditions, thinning overstocked stands continue as clear-cut harvesting and road improvement work. Due to lack of information on where these actions might take place in the future, it is not possible to assess what, if any impact to peak flows may occur from actions on private lands.

4.1.2 Issue #2 - What are the effects of harvesting activities and road management activities on erosion and sediment delivery to water bodies? Consider the effects of planned activities on the water quality parameters, turbidity, and sedimentation. This specifically concerns the following actions:

- Ⓒ Replacement of failing log culvert in existing stream crossing in proposed Harvest Area 8 with a corrugated metal pipe sized to a theoretical 100-year storm event.
- Ⓒ Road upgrade projects, including additional cross drains on Road Nos. 20-2-1, and 19-2-13 (Harvest Area No. 6).
- Ⓒ Temporary road construction (with no stream crossings) in proposed Harvest Areas 2, 4, 6, 8 and 10.

Direct and Indirect Effects

Direct effects include the temporary addition of sediment to streams during the replacement of two of stream crossings. The impacts to the stream at the individual crossings are expected to be short-term, as the first fall rains following the activity would move the sediment downstream.

Replacement of the failing or eroding stream crossing structures would improve long term conditions and reduce the amount of sediment entering the stream at the crossing (meets ACS Objectives 4, 5). Replacement of the failing log culvert near proposed Harvest Area 8 would reduce the potential for possible catastrophic downstream impacts to aquatic resources and associated beneficial uses as identified by the Oregon Department of Environmental Quality. Sizing the permanent crossing to accommodate a 100-year storm event would maintain the natural sediment regime and reduce the potential for plugging by debris (meets ACS Objective 5). Minor excavation to restore the natural stream channel upstream from the log culvert site would return that stream to its natural drainage and minimize future sediment recruitment (and road maintenance) from ditch erosion (meets ACS Objectives 3, 5).

Indirect effects include impacts to the channel farther downstream as a result of movement of the sediment generated during removal of a stream crossing. Again, this impact is anticipated to be short-term as the fall and winter storms would disperse the sediment through the system downstream. The placement of relief drainage features to improve existing roads would have no direct effects to channels, but would have the indirect effect of reducing the amount of sediment from these roads delivered to streams.

No direct or indirect effects are anticipated from new temporary road construction as no proposed segments intersect streams or are contained within Riparian Reserves. No direct or indirect effects are expected from harvesting activities, since no cutting or yarding would take place within 180 feet of a stream channel, or on any steep and potentially unstable slopes.

There are no direct effects of the action to fisheries. Short term delivery of fine sediment to downstream fish habitat could be an indirect negative effect of culvert work. Requiring all work to be done during the summer and using silt fences / straw bales to trap sediment, would keep any short term sediment addition to a minimum. Removal of some culverts would indirectly benefit fish, as would replacing old, damaged culverts. The benefits to fish from implementing the proposed action far out weigh any short term disturbance. The Proposed Action would not prevent the attainment of ACS Objective #4 and would meet ACS Objective #2.

Cumulative Effects

ACS Objective 5 calls for the maintenance and restoration of the sediment regime under which aquatic ecosystems evolved. The Lost Creek Watershed analysis determined roads have increased the potential for sediment delivery to streams above natural background levels in several sub-basins, including Anthony, and Middle Creeks.

Recommendations in the watershed analysis to reduce sediment delivery from roads include: replacement of eroding culverts, and the placement of additional relief drainage on permanent roads. The Proposed Action includes elements of these recommendations such as; improvement of relief drainage on existing roads; replacement of failing crossings; as well as no permanent new stream crossings.

The cumulative effect from the Proposed Action would be to improve the sediment regime and water quality in the sub-basins mentioned above, thereby meeting the intent of ACS Objectives 4 and 5.

No negative cumulative effects on fish are expected from the Proposed Action. The Lost Creek Watershed Analysis determined roads have increased the potential for sediment delivery in several sub-basins, including Anthony and Middle Creeks. The Proposed Action includes practices (improvement of relief drainage on existing roads and replacement of failing crossings) which were recommended in the watershed analysis to reduce sediment delivery to streams from roads and help meet the intent of ACS Objective 5. The removal of old, failing culverts would have a positive cumulative effect on fish by increasing the amount of habitat available to them. Removal and /or replacement of old culverts, along with repairing ditch relief culverts, would decrease the amount of fine sediment entering streams at road crossings, and thus benefit fish. The Proposed Action's harvest regime of 15 acres of regeneration harvest and 176 acres of thinning within the approximately 3,000 acre analysis area would not occur within 180 feet of a stream channel, or on any steep and potentially unstable slopes. Therefore, ACS Objectives 4 and 5 would be met and no negative cumulative effects on fish from harvesting activity are expected.

4.1.4 Issue #3 - What Is the Impact of Harvesting Activities on a Northern spotted owl Nest Site Adjacent to a Planned Harvest Area?

Direct and Indirect Effects

An owl pair has used several nest trees in riparian areas within 1/4 mile to three of the proposed timber harvest areas. No nesting spotted owls have ever been detected within the harvest area boundaries. The direct effect of the proposed action would be the loss of 40 acres of suitable nesting habitat that is within 0.5 mile of the most recently used nest sites. This habitat would be downgraded from suitable nesting habitat to dispersal habitat. As dispersal habitat this area would function as foraging habitat. The indirect effect would be that potential nesting would be precluded in this area for approximately 10-15 years. Another direct effect would be an additional 28 acres of dispersal habitat within 0.5 mile of the nest sites would be degraded by the proposed thinning activities. This degradation of dispersal habitat would be a relatively short-term effect as long as other structural habitat components, such as down logs and snags, are retained during logging activities (See Appendix A).

Seasonal restrictions during the critical nest period (March 1-July 15) would prevent disturbance to the nest area during the most sensitive time in the nesting season. Logging and road activities would have no direct effects on nesting spotted owls due to disturbance.

Consultation with U.S. Fish and Wildlife Service was done for this project in the Willamette Province Fiscal Year 1999 Habitat Modification Biological Assessment for Effects to Listed Species. A Biological Opinion (BO 1-7-98-F-381) determined that the projects included in the assessment did not jeopardize the existence of the Northern spotted owl.

Cumulative Effects

Cumulative effects to spotted owls within the watershed are negligible due to the number of owl pairs currently occupying the watershed, and the larger number of owl pairs within the adjacent Forest Service lands. The potential for harvesting activities to displace the existing pair of owls is relatively low. However, if this does occur, the site would still have the potential for occupancy from owls dispersing off adjacent Forest Service lands.

4.1.5 Issue #4 - What are the impacts of harvesting and road management activities on the Critical Habitat Unit? Proposed Harvest Area Nos. 2, 3, and 4 are in the Critical Habitat Unit.

Direct and Indirect Effects

The proposed action would have negligible effects on the Critical Habitat Unit. Three of the proposed harvest areas are within land designated as Critical Habitat Unit OR-20 by U.S. Fish & Wildlife Service. A direct effect of harvesting the proposed areas would result in the loss of 40 acres (2%) of currently available suitable spotted owl nesting habitat. Harvest would downgrade this suitable nesting habitat to dispersal habitat. The proposed action would directly affect owls by degrading 28 acres (1%) of currently available dispersal habitat within the Critical Habitat Unit. This would be expected to be a short-term effect. Since the

proposed action would modify such a small percentage of the Critical Habitat Unit, the viability of the Critical Habitat Unit would not be compromised.

Cumulative Effects

Critical Habitat Units originally designated by the U.S. Fish & Wildlife Service as an interim measure to provide habitat for Northern spotted owls until a recovery plan or management plan addressing Northern spotted owl habitat was adopted. The Northwest Forest Plan currently serves as the recovery plan for the Northern spotted owl. The Northwest Forest Plan provides for a network of Riparian Reserves and Late-Successional Reserves that are intended to provide sufficient habitat across the range of the species to provide for population viability of the species. Under this scenario the Critical Habitat Unit would not be necessary in the future to provide sufficient habitat for the species to ensure species viability. Future timber harvests on BLM and Forest Service lands within the Critical Habitat Unit would likely reduce the habitat within the Critical Habitat Unit, but the viability of the population of Northern spotted owls should still be retained.

4.2 Alternative II - No Action

4.2.1 Issue #1 - *What are the impacts of harvesting activities and road management on the timing and magnitude of Peak Flow? This specifically concerns the following actions:*

- C Timber harvesting on proposed Harvest Areas 6, 8, and 10 (97 acres) within in the transient snow zone.
- C Planned road construction and road restoration work in the project area.

Direct and Indirect Effects

No direct or indirect effects to stream flows would result from implementing this alternative since harvesting and proposed road management would not take place. Existing stream flows would be maintained at the current condition, and for that reason, ACS Objective 6 would be met.

Cumulative Effects

The current condition would be maintained where existing roads, in some cases, act as extensions of stream systems and contribute to peak flows. Opportunities to improve road drainage would be postponed until a later time.

4.2.2 Issue #2 - *What are the effects of harvesting activities and road management activities on erosion and sediment delivery to water bodies? Consider the effects of planned activities on the water quality parameters, turbidity, and sedimentation. This specifically concerns the following actions:*

- Ⓒ Replacement of failing log culvert in existing stream crossing in proposed Harvest Area 8 with a corrugated metal pipe sized to a theoretical 100 year storm event.
- Ⓒ Road upgrade projects, including the addition of cross drains on Rd. Nos. 20-2-1, and 19-2-13 (Harvest Area No. 6).
- Ⓒ Temporary road construction (with no stream crossings) in proposed Harvest Areas 2, 4, 6, 8, and 10.

Direct and Indirect Effects

Since harvesting, proposed road management, and restoration work would not take place, a direct effect is that excessive erosion would continue where a stream channel has been diverted to the roadside ditch by a failed skid road in proposed Harvest Area 8.

An indirect effect of this alternative is that without a replacement, a potentially unstable stream crossing in proposed Harvest Area 8 could fail catastrophically, and seriously degrade downstream beneficial uses. Water quality and the stream channel would be impacted by such a failure, and the intent of ACS Objective 4 for watershed restoration would not be met.

No existing culverts would be replaced. Sedimentation would continue and passage barriers would persist in the proposed project area.

Cumulative Effects

In comparison to the Proposed Action, none of the road restoration or improvement measures designed to reduce sediment delivery to streams from existing roads (i.e., additional relief drainage or stabilization of failing and eroding stream crossings) would take place. Improvement of the sediment regime or water quality of the sub-basins would not occur. The opportunity to conduct the identified restoration work that would eventually contribute to improved conditions in the watershed would be delayed until a later time.

There would be cumulative effects to fish if the identified culverts failed allowing unmeasurable amounts of sediment into streams. This would hinder reproductive capabilities of fish in the Lost Creek watershed and have a negative effect on the population.

4.2.4 Issue #3 - *What are the Impacts of Harvesting Activities on a Northern Spotted Owl Nest Site Adjacent to a Planned Harvest Area?*

Direct and Indirect Effects

It is highly likely that there would be continued occupancy and reproduction by a pair of Northern spotted owls located near one of the proposed harvest areas. Habitat within 1/4 mile to the

proposed project area that is currently suitable for nesting would remain suitable. Habitat within 1/4 mile to the proposed project area that is currently dispersal habitat would become suitable nest habitat in the future. This long-term increase in nesting habitat would improve the viability of the nest sites adjacent to the proposed harvest areas.

Cumulative Effects

There would be no cumulative effects because no harvest or road activities would take place within 1/4 mile to the spotted owl nest site. Future activities on Federal lands within the Lost Creek watershed would be unlikely to impact this nest site.

4.2.5 Issue #4 - *What are the impacts of harvesting and road management activities on the Northern Spotted Owl Critical Habitat Unit? Proposed Harvest Areas No. 2, 3, and 4 are in the Critical Habitat Unit.*

Direct and Indirect Effects

This alternative would have no direct effect on spotted owls. There would be no short-term change in the current amount of habitat or the viability of the Spotted Owl Critical Habitat Unit. The indirect effect would be, over the long-term, dispersal habitat within the Critical Habitat Unit would mature into nesting habitat for Northern spotted owls.

Cumulative Effects

There would be no cumulative effects to Spotted Owl Critical Habitat Unit occurring in the watershed (BLM managed lands) because no road activity or harvesting activity would take place.

4.4 Other Environmental Effects - Common To All Action Alternatives

4.4.1 Unaffected Resources

The following either are not present or would not be affected by any of the alternatives: Areas of Critical Environmental Concerns, prime or unique farm lands, flood plains, Native American religious concerns, solid or hazardous wastes, Wild and Scenic Rivers, Wilderness, Minority populations, and low-income populations.

4.4.2 Wetlands

Since no ground disturbing activities would occur in meadows and wetlands, the hydrology in these sensitive areas would be maintained in the current condition, and the intent of ACS Objective 7 would be met.

4.4.3 Recreation

The Action Alternative would not have any adverse effects on the dispersed recreational opportunities existing in the project area. Proposed decommissioning of temporary roads would not affect future vehicle access opportunities into the Lost Creek Watershed, because these areas are currently behind private locked gates. The proposed Harvest Areas are subject to the Visual Resource Management (VRM) Class IV management prescription under the 1995 Eugene District RMP. There are no Wilderness Areas, Roadless Areas, or Wild and Scenic Rivers in, or adjacent to, the analysis area.

4.4.4 Threatened and Endangered Species

There are two Unmapped Late-Successional Reserve areas that were designated around known spotted owl activity areas. These LSRs would have seasonal restrictions for all activities within 0.25 mile of them during the critical nest period for spotted owls (March 1- July 15). No activities would occur during this period unless surveys document that owls are not nesting within these areas. These restrictions would eliminate negative effects due to disturbance on nesting owls during the critical nest period.

Oregon chub, an endangered minnow, lives in the lower reaches of Rattlesnake Creek. Proposed Harvest Area 5 is located in the headwaters, approximately seven miles away. The USFWS has concurred with the BLM determination of a “No Effect” to Oregon chub for this action.

The Lost Creek Watershed is designated Critical Habitat for spring chinook salmon, a threatened species. Informal consultation on the original Lost Creek EA has been completed with a concurrence determination of “May Affect, Not Likely to Adversely Affect.” Concurrence letters from National Marine Fisheries Service dated August 4, 1999 (Lost Creek) and September 15, 1999 (Little Rest) have been received.

The following modifications have been made to the original proposals consulted on in the original spring chinook biological assessments:

- Approximately 2/3 fewer acres are proposed for treatment.
- No Riparian Reserve thinning would occur.
- Fewer road miles/less culvert work would be undertaken.
- A new haul route would be considerably shorter and more efficient

Subsequent to the original Lost Creek Biological Assessment, a new concrete bridge is being constructed across the west fork of Anthony Creek to eliminate an old ford crossing at that point. The BLM originally proposed hauling timber from Harvest Area Nos. 5 and 7 to avoid this stream crossing and instead haul timber approximately 8 and 11 miles respectively, around the crossing. With the new bridge the haul route would be shortened by 5 miles for Harvest Area No. 5 and 10 miles for Harvest Area No. 7. The haul route change would decrease the amount of rocked road miles used in the haul, which could reduce the chance and amount of road related sediment reaching stream systems.

4.4.5 Cultural Resources

No cultural sites have been identified. Therefore, there would be no direct, indirect, or cumulative effects to cultural resources.

4.4.6 American Indian Rights

No impacts on American Indian social, economic, or subsistence rights are anticipated. No impacts are anticipated on the American Indian Religious Freedom Act. Management action information was sent to the Confederated Tribes of the Grand Ronde, and Confederated Tribes of the Siletz.

5.0 LIST OF AGENCIES AND PERSONS CONSULTED

This Environmental Analysis is being mailed to the following members of the public or organizations that have requested to be on the mailing list:

John Bianco	Roseburg Forest Products
Oregon DEQ	Peter Saraceno
Jim Goodpasture	Harold Schroeder
Pam Hewitt	Sierra Club - Many Rivers Group
Charles & Reida Kimmel	Swanson Superior Forest Products Inc.
Lane County Land Management	Craig Tupper
Carol Logan, Kalapooya Sacred Circle Alliance	Governor's Forest Planning Team
Oregon Dept of Fish & Wildlife	Jan Wroncy
Oregon Dept of Forestry	Ann Mathews
Oregon Natural Resources Council	American Lands Alliance
The Pacific Rivers Council	Kris and John Ward
John Poynter	Sondra Zemansky
Leroy Pruitt	Robert P Davison
	Tom Stave, U of O Library

A letter was sent to the adjacent landowners on December 22, 1997 that identified specific areas being considered, project issues, and time lines for providing input. A summary was sent to those receiving the "Eugene BLM Planning and Project Focus" Winter 1997 (approximately 250 mailings - a complete listing is available at the Eugene District Office). Another summary describing how this environmental analysis has changed will be sent out in July 2000 announcing that the EA has been released and open for comments.

Maps of the Proposed Action were sent to the Confederated Tribes of the Grand Ronde and Confederated Tribes of Siletz in December 1997. No comments were received.

6.0 LIST OF PREPARERS

THE INTERDISCIPLINARY TEAM

NAME	TITLE	RESOURCE/ DISCIPLINE
Rudy Wiedenbeck	Soil Scientist	Soils
Jack Zwiesler	Forester	Timber
Paula Larson	Wildlife Biologist	Wildlife Habitat (Survey and Manage Mollusks and Red Tree Vole)
Michael Southard Beth Clarke	Archaeologist NRS Technician	Cultural Resources
Lynn Larson	Forest Ecologist	Silviculture
Cheshire Mayrsohn	Botanist	Botany (Survey and Manage fungi, bryophytes and lichens)
Dave Reed	Fuels Technician	Fuels/Air Quality
Glen Gard	Natural Resource Protection Specialist	Hazardous Materials Coordinator
Karen Martin	Fisheries Biologist	Fisheries
Greg Bashor	Engineering	Roads/Transportation
Kris Ward	Hydrologist	Water Resources
Don Wilbur	Natural Resource Protection Specialist	Team Leader/EA Writer

DESIGN FEATURES FOR PROPOSED ACTION ALTERNATIVE AND MONITORING

Design features include timber sale design, contract stipulations, and prescribed activities to be accomplished by the BLM or timber sale purchaser. The objective of these design features is to maintain or enhance the quality, quantity, and productivity of the resources in the analysis area.

The Best Management Practices (BMP) enumerated in the Eugene District RMP (Appendix C, pp. 155 - 170) is a compilation of existing policies, guidelines, and commonly used practices designed to minimize water quality degradation and loss of soil productivity while meeting other resource objectives. For all action alternatives under this EA, the interdisciplinary team selected the following BMPs as most applicable to soil and water protection on these specific sites.

1. To minimize loss of soil productivity and reduce the potential for surface erosion and run-off during yarding:
 - Lead-end (front-end) suspension of logs is required wherever topography permits.
 - Intermediate supports would be required, if necessary, to achieve lead-end suspension. This is especially important when yarding over rocky erodible soils (bottom of Harvest Area No. 7, and the bottom piece of Harvest Area No. 8).
2. Management activities would be altered according to RMP Standards and Guidelines if any cultural resources, Special Status Plants including Threatened and Endangered, Survey and Manage Species, or Threatened and Endangered Wildlife are found in or adjacent to the harvest areas.
3. Falling and yarding requirements: Directional falling and yarding would be utilized for the protection of retention trees, snags, and reserve areas.
4. To provide habitat for cavity dependent wildlife, and to protect the future source of down logs, no marked reserve trees would be removed from the harvest areas. Directional falling and yarding would be utilized to protect snags consistent with State safety practices. Snags would be retained where possible. If snags are felled as danger trees, they would be retained on site as Coarse Woody Debris.
5. All timber harvesting boundaries have been adjusted to exclude all Fragile Non-suitable and withdrawn areas from the harvest area. Fragile Non-suitable areas include sites with shallow, rocky soils, potentially unstable slopes, and wetlands. Withdrawn areas also include areas where surface rock is excessive, limiting potential for future reforestation.

6. To achieve the goal of insignificant (i.e., less than 1% per decade) growth-loss effects from soil compaction (2% or less of any treated area compacted after amelioration practices) the following operational restrictions and mitigation measures would be applied to all acres harvested or yarded with ground based machines:
 - C Restrict ground-based operations to slopes less than 35 percent to reduce the amount of soil disturbance. Limit excavation on primary skid trails to a maximum cut of 2 feet and maximum length of 30 feet at any one location without the prior approval of the Authorized Officer.
 - C Restrict all ground-based cutting or yarding to seasonally dry periods when soil moisture levels are less than 25 percent, as approved by the Authorized Officer in consultation with Soil Scientist (usually July 15 to October 15).
 - C Preplan and designate all skid trails (to be approved by the Authorized Officer and the Area Soil Scientist) to occupy less than 10 percent of the ground based harvest area. Any route where machines make multiple passes (2 or more) is considered “primary” and applies towards this 10 percent rule. Require felling of trees to lead to the skid trails, maximize winching distances up to 100 feet, and the distances between trails up to 200 feet where feasible. Use existing skid trails wherever possible (esp. Harvest Areas 6 & 8).
 - C If harvester processors or feller bunchers are used (Harvest Area 10): Limit movement away from primary trails to a single pass. Direct the operator to cross the harvest area as efficiently as possible in order to minimize the length of primary trails, and to limit the number of passes over the same area to one time when operating off the primary trails.
 - C Keep harvester processors moving on top of slash whenever possible. This is especially critical when soils are heavy in clay, as is the case here, and/or when working soon after a rainy period.
 - C In order to avoid ground based yarding where soil compaction cannot be mitigated, obtain approval from Authorized Officer of the location of all primary/designated skid trails. This generally refers to localized sites with moderate to high amounts of surface rock or rocky subsoil (esp. Harvest Areas 2, 4 & 8).
7. Apply seasonal restrictions on all harvest activities and roads that would occur within 1/4 mile of known nesting spotted owls, osprey, eagles, herons, accpetor hawks, and winter roost locations.
8. Seasonal restrictions would apply for all harvest, hauling, and road activities on Harvest Areas 2, 3, 4 and 5 during the critical nest period for Northern spotted owls (March 1-July 15). Apply seasonal restrictions for hauling on Road Nos. 19-1-31 and 19-1-31.1 during the critical nest period for Northern spotted owls (March 1-July 15). These restrictions may be waived by the Area Wildlife Biologist if it is determined that nesting activities would not be disturbed by proposed activities.

9. All adjacent riparian areas retain interim widths for fish and aquatic habitats as defined in Northwest Forest Plan ROD.
10. For the purpose of long-term productivity and maintenance of biological diversity, all down woody debris of advance decay (class 3, 4, & 5) would be retained on site or disturbed as little as possible.

PROJECT DESIGN FEATURES COMMON TO THE REGENERATION AREA

11. The regeneration harvest area would be leave-tree marked for required snags (3.4 trees per acre; marked trees would be \Rightarrow 15 inches in diameter distributed across the diameter range); green tree retention (7 trees/acre averaged over the area; minimum diameter for trees marked in clumps is \Rightarrow 8 inches, and trees scattered throughout the harvest area would be \Rightarrow 14 inches; trees would be marked in all existing diameter classes and mimic the diameter distribution in the stand).
12. Coarse Woody Debris requirements: Leave 240 linear feet of class 1 and 2 logs per acre greater than or equal to 20 inches in diameter. Logs less than 20 feet in length would not be credited towards this total.
13. For the purpose of long-term productivity and maintenance of biological diversity, retain all down material of advanced decay for coarse woody debris (class 3, 4, & 5).
14. All primary skid trails would be subsoiled with appropriate machinery (winged subsoiler or excavator that has been modified for tillage) as soon as possible after yarding when soil moisture conditions are 25 percent or less, as directed by Authorized Officer in consultation with the Soil Scientist.

PROJECT DESIGN FEATURES COMMON TO THINNING ACTIONS

15. Snags and large remnant trees would not be cut, except those in the temporary road construction right-of-way, and those posing a safety hazard.
16. Log lengths would be limited to 40 feet in order to protect residual trees during yarding.
17. Thin from below, cutting suppressed, intermediate, and some co-dominants. Residual tree spacing would be approximately 19-22 foot spacing, which would leave approximately 90 to 120 trees per acre. Trees larger than 24 inches DBH would be reserved, except for trees inside the thinning corridors.
18. Yarding restriction during sap flow is April 1 through June 15.

DESIGN FEATURES FOR ROAD PLANNING, DESIGN AND CONSTRUCTION ACTIVITIES

These Design features would be utilized to maintain water quality (ACS Objective #4), natural sediment transport in stream channels (ACS Objective #5), and to maintain in-stream flow (ACS Objective #6), that include:

19. No road construction would be conducted on potentially unstable areas, including over-steepened head walls and side slopes adjacent to streams.
20. Wetlands would be avoided entirely when constructing new roads (ROD/S&G).
21. Where the potential for sediment delivery exists on permanent roads, these roads would be surfaced with rock aggregate to minimize road surface erosion. Review existing roads that would be used for a timber sale to identify opportunities to install relief drainage features. In particular, use cross drains, drainage dips, and/or lead-off ditches to reduce the amount of sediment delivered to streams via the cut slope ditch. Avoid discharging relief drains into the erodible or unprotected slopes, or into stream channels.
22. Place relief drainage features immediately upgradient of stream crossings to prevent cut slope ditch sediment from entering the stream.
23. Locate cross drains or dips in such a manner as to avoid outflows onto unstable terrain such as head walls and steep stream side slopes. Provide adequate spacing to avoid accumulation of water in ditches or surfaces through these areas.
24. Where feasible, design culvert placement on a straight reach of stream to minimize erosion at both ends of the culvert. Design adequate streambank protection (i.e., riprap) where scouring could occur.
25. Replace existing road stream crossings that are (1) failing and otherwise depositing excess sediment into streams, or (2) undersized and located in an area with moderate to high potential for slope failures. All culvert work would be conducted during the summer. Silt fences/straw bales would be used to minimize sediment delivery to downstream fisheries.
26. Road construction would be limited to the dry season (generally between June 15 and October 15), as well as any harvest operations conducted from temporary native surface roads.
27. Use the theoretical 100-year storm event as design criteria for permanent culverts. Keep culverts as wide as the channel, if possible. Countersink permanent culverts 6-8 inches below the streambed to minimize scouring at the outlet. Increase culvert diameters accordingly to minimize

chances of plugging. Try to keep culverts at the same gradient or greater than the natural stream channel. Place riprap on any fill material next to permanent culvert inlets and outlets.

28. Use rock that is as soil-free as possible for fill material when installing temporary culverts. Whenever possible, use washed river rock covered by crushed rock as a compacted running surface.
29. Design for the smallest fill possible at stream crossings. Maintain vegetation at the margins of the stream channel approach since the vegetation helps keep the channel stable and often acts as a “trash rack” for woody debris.

DESIGN FEATURES FOR ROAD DECOMMISSIONING OR RESTORATION

Apply the following BMPs to (1) reclaim roaded areas, (2) reduce the potential for road surface erosion, road-related slope failures, and subsequent sediment delivery to streams, and (3) maintain water quality (ACS Objective #4) during removal of temporary stream crossings or stream crossings no longer needed:

30. All temporary native surface roads would be left in an erosion resistant condition and blocked at the end of each operating season prior to the onset of wet weather. This would include construction of drainage dips, water bars, and lead-off ditches.
31. Avoid rocking new, temporary roads scheduled for decommissioning.
32. Decommission / reclaim existing or new, temporary, native surface roads with no identified future entry needs (10 years) at the end of operational activities. At a minimum, remove all stream crossings and drainage features. For stream crossings, recontour the channel side slopes and seed and/or plant bare areas with native plant species for erosion control, as needed. Where decommissioned roads will not be subsoiled, construct drainage dips, water bars, lead-off ditches, etc. to improve drainage of the surface and otherwise leave the road in an erosion resistant condition.

DESIGN FEATURES FOR SITE PREPARATION AND MONITORING

Regeneration harvest in Area 7 would require site preparation prior to reforestation activities. Piling using a backhoe-excavator is the preferred machine piling method since it results in less soil compaction and displacement than traditional tractor piling methods. Apply the following operational restrictions and mitigation measures so backhoe-excavator piling activities result in insignificant disturbance (2 percent or less of any treated area compacted after amelioration practices):

33. Backhoe-excavator operations would be restricted to slopes of less than 40 percent.

34. Backhoe-excavator operations would take place when soil moisture content is less than 35 percent. Because the soils in harvest area 7 (Bellpine series) have heavy textured (silty clay) subsoils, these sites would be operated as late in the summer as possible, ideally between August and the first fall rains.
35. During rainy periods, piling operations would be terminated and not resume until the Authorized Officer in consultation with Area soil scientist, has investigated soil moisture conditions, and the surface soils have had an opportunity to dry.
36. The operator would be directed to cross the harvest area as efficiently as possible in order to minimize the number of trails, and to limit the number of passes over the same area to one time.
37. The excavator would be kept moving on top of slash whenever possible. This is especially critical when soil moisture levels are greater than 30 percent, soils are heavy in clay, and when working soon after a rainy period.
38. Backhoe-excavator would avoid crossing streams or drainages, wetlands, and Survey & Manage retention zones.
39. When soil compaction resulting from site preparation activities is beyond BLM standards, the compacted areas would be tilled with properly designed equipment to achieve insignificant growth-loss from compaction.
40. The machine piling operations (For Harvest Area 7) would be managed so as not to over achieve the objective of the piling effort by piling more slash than is necessary for improving planting spot access. A light machine piling treatment limits the amount of litter and other debris removed from the site, and reduces the risk of incurring higher levels of soil compaction and soil displacement.
41. Burning of piles would be of short duration; however, final decision would be made by Oregon Department of Forestry through Smoke Management Advisories. The burning of piles would occur between Nov. 1 and Jan. 1 when the most favorable emission dispersion conditions are possible. The burning of piles may occur over several days. It is not anticipated that the burning of piles would exceed the National Ambient Air Quality Standards or the State Implementation Plan for air quality.
42. Residual material that may be piled on landings along existing roads, or down material (except reserved coarse woody debris) that could be reached from existing roads, would be available for disposal as Special Forest Products such as firewood, fence posts, or poles.
43. For thinning areas 2, 3, 4, 5, 6, 8, and 10 landing and large roadside piles may be created by the commercial thinning. These piles would be covered and burned. All pile burning would take place after all useable material such as firewood, posts or poles have been utilized. Pile burning would take place between November 1st and December 31st when moisture conditions preclude

the spread of fire and conditions are favorable for smoke dispersal conditions.

DESIGN FEATURES FOR SURVEY AND MANAGE SPECIES COMMON ALL ACTION ALTERNATIVES

1. Mollusks

Current interagency management recommendations for Survey and Manage mollusks were issued in November 1999. Management for all mollusk sites within the proposed project area meets or exceeds these interagency recommendations. All sites were managed by establishing at least a 0.25 acre buffer around the site. No harvest activity is allowed within the boundary of these buffers.

2. Red tree vole

The current interim red tree vole management recommendations require that all red tree vole sites be given at least a 10 acre buffer. All red tree vole sites within the proposed harvest areas were given a buffer of at least that size. No harvest activity is allowed within the boundary of these buffers.

3. Fungi

Protection Buffer Fungi - All sites of Protection Buffer fungi (*Sarcosoma mexicana*, *Otidea onotica*) require protection with a 60-foot no-entry buffer (0.25 acre). The reserves may overlap or be contained with another no-entry reserve such as one for mollusks, red tree voles, or other fungi.

Component 1 Fungi - Component 1 species (*Phaeocollybia* sp., *Ramaria* sp. and *Sarcosoma latahense*) require a one site tree no-entry buffer around the location. The reserves may overlap or be contained with another no-entry reserve such as one for mollusks, red tree voles, or other fungi.

Helvella compressa (Component 1) two sites have 120 foot no entry buffers which overlap buffers for other fungi species. This results in the actual buffer being larger than what is required.

4. Bryophytes

No buffers or reserves are required for *Ulota megalospora* (Protection Buffer Moss).

APPENDIX B

HARVEST AREA DETAILS FOR THE PROPOSED ACTION

Harvest Area	Land Use Allocation	Legal	Total Acres	Volume/Acre (MBF)	Total Volume (MBF)	Treatment Type	Harvest system (acres)	Timber Age
2	GFMA	20-1W-5	24	21	504	Thin	Skyline (19) Tractor (5)	55
3	GFMA	20-1W-5	16	12	192	Thin	Skyline (16)	55
4	GFMA	20-1W-5	28	12	336	Thin	Skyline (10) Tractor (18)	55
5	GFMA	19-2W-23	11	16	171	Thin	Tractor (11)	55
6	CONN	19-2W-35	24	14	336	Thin	Tractor (24)	50
7	GFMA	19-1W-31	15	28	420	Regen	Skyline (9) Tractor (6)	70
8	GFMA	20-2W-1	21	12	252	Thin	Skyline (15) Tractor (6)	50
10	GFMA	20-2W-1	52	12	629	Thin	Tractor (52)	70

DMT = Density Management Thinning

Regen. = Regeneration Harvest

Thin = Commercial Thinning

GFMA=General Forest Management Area Land Use Allocation

CONN=Connectivity Land Use Allocation

Note: Harvest Areas 1 & 9 were deferred from harvest because Survey and Manage species had a high rate of occurrence that no longer made feasible Harvest Areas.

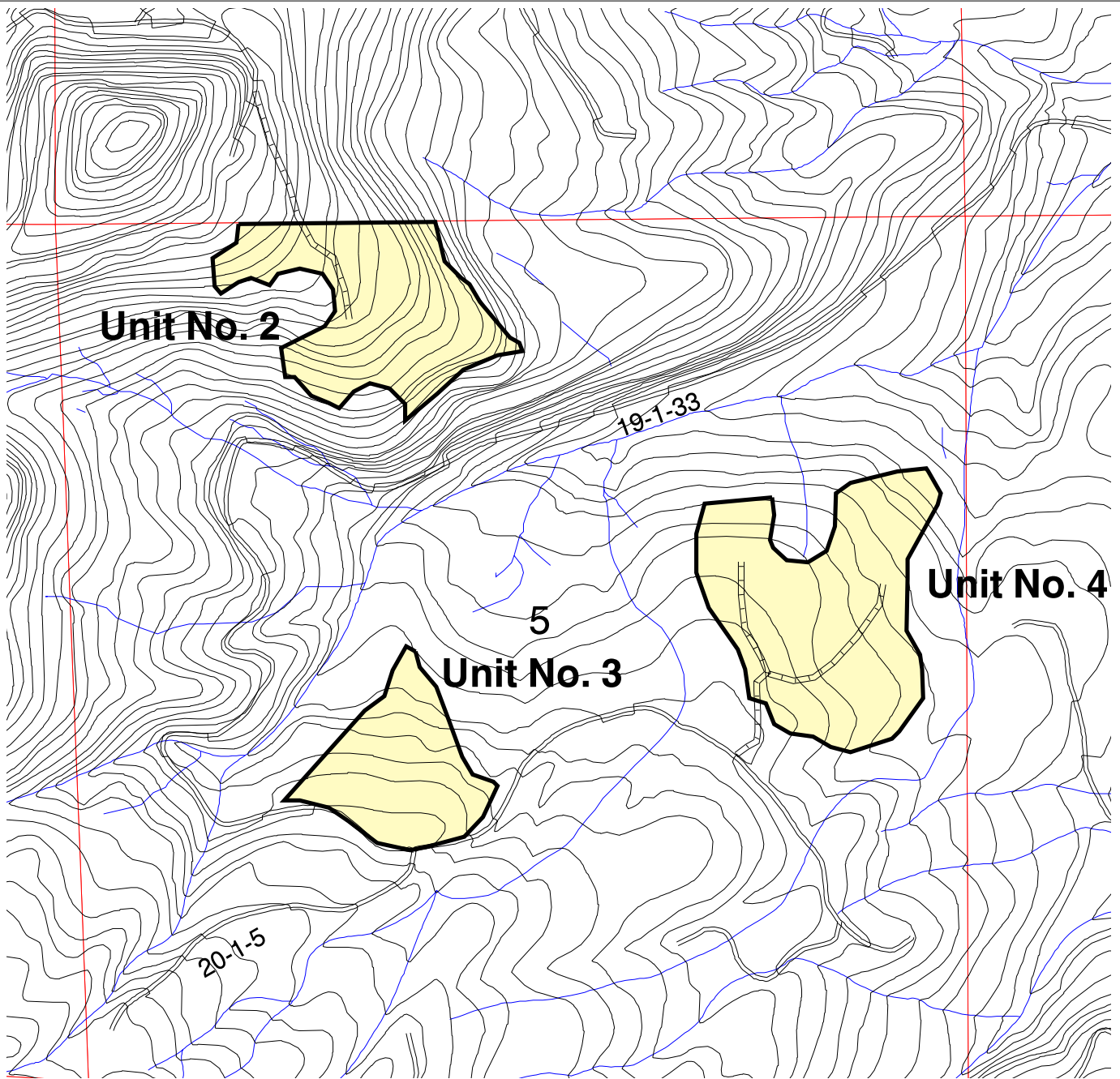
ROAD CONSTRUCTION AND CLOSURE SUMMARY FOR ALTERNATIVE I

The following Proposed Actions would be accomplished under timber sales covered by this EA.

Harvest Area #	Road No.	Miles Dirt Const.	Miles Dirt Road Renovation	Miles Rock Road Improv.	Total Culverts Replaced / or New Culverts / or Removed	Total Miles Decom.
2.	20-1-3.1A & Spur 2A	0.17	0.27		1 - replace	0.17
3.	Existing Rd. 19-1-33					
4.	Spur 4A Spur 4B	0.31			2 - new 2 - remove	0.31
5.	Existing Rd. 19-2-13					
6.	Spur 6A, 19-2-13.0 G, 20-2-1.0 D, 20-2-2.1E	0.13		1.45	4 - new 4 - replace	0.13
7.	Existing Rd. 19-1-30.3					
8.	20-2-1.0A Spur 8A	0.07		0.64	5 - new 2 - replace	0.07
10.	Spur 10A	0.18				0.18
TOTALS		0.86	0.27	2.09		0.86

****Note:** Harvest Areas 1 & 9 were deferred from harvest because Survey and Manage species had a high rate of occurrence that no longer made feasible Harvest Areas.







**MAPS AND LOCATION OF ROAD CONSTRUCTION, AND HARVESTING ON
ALTERNATIVE I**



Unit No. 2, 24 Acre Thin
 Unit No. 3, 16 Acre Thin
 Unit No. 4, 28 Acre Thin

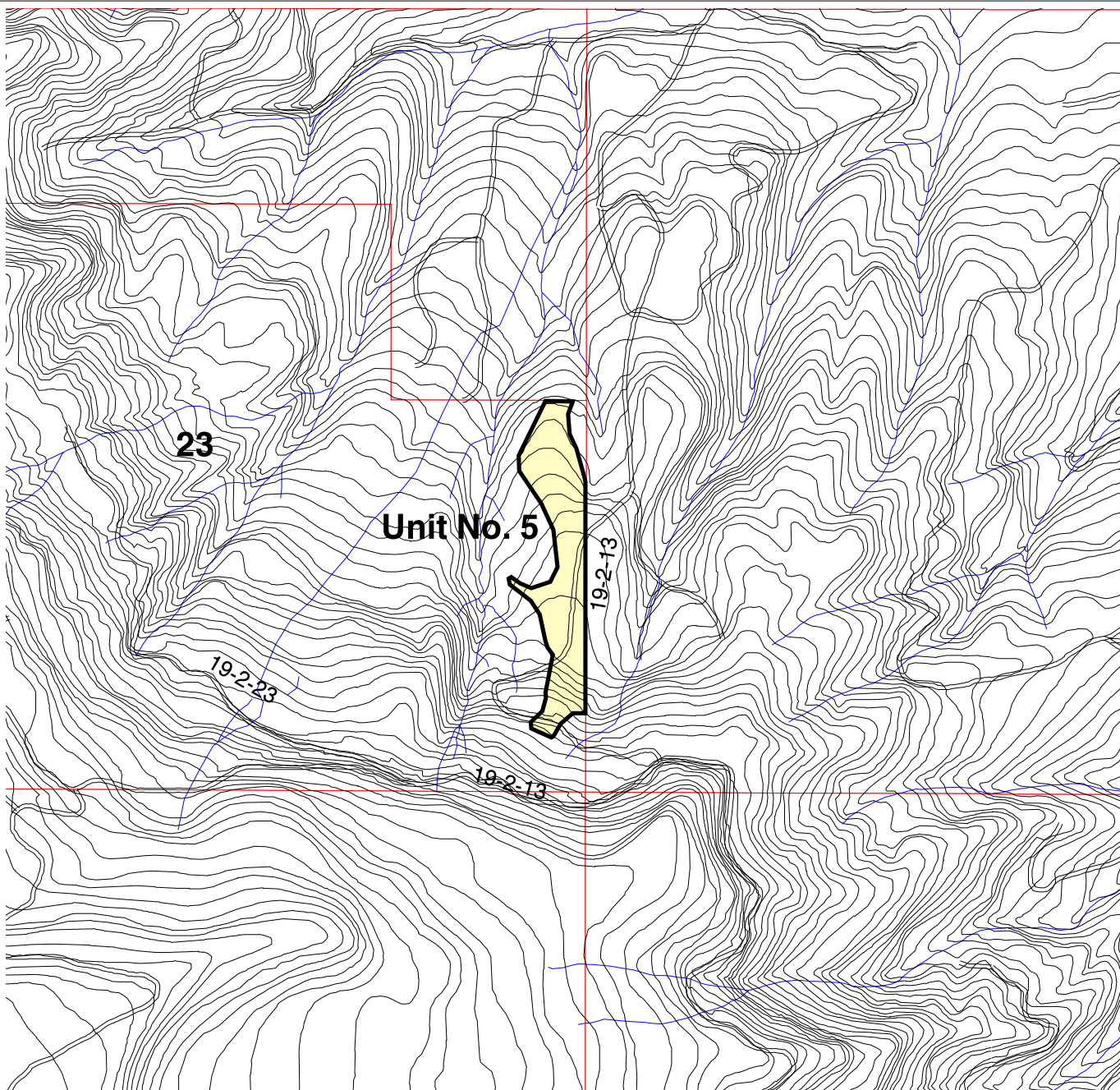
Alternative No. 1 - Proposed Action
2000 Timber Sale
Unit Nos. 2, 3 and 4

T.20S., R.01W., Sec. 5

-  Roads (Proposed)
-  Contour
-  Existing Roads
-  Streams
-  2000sales
-  Property Lines

1000 0 1000 2000 Feet





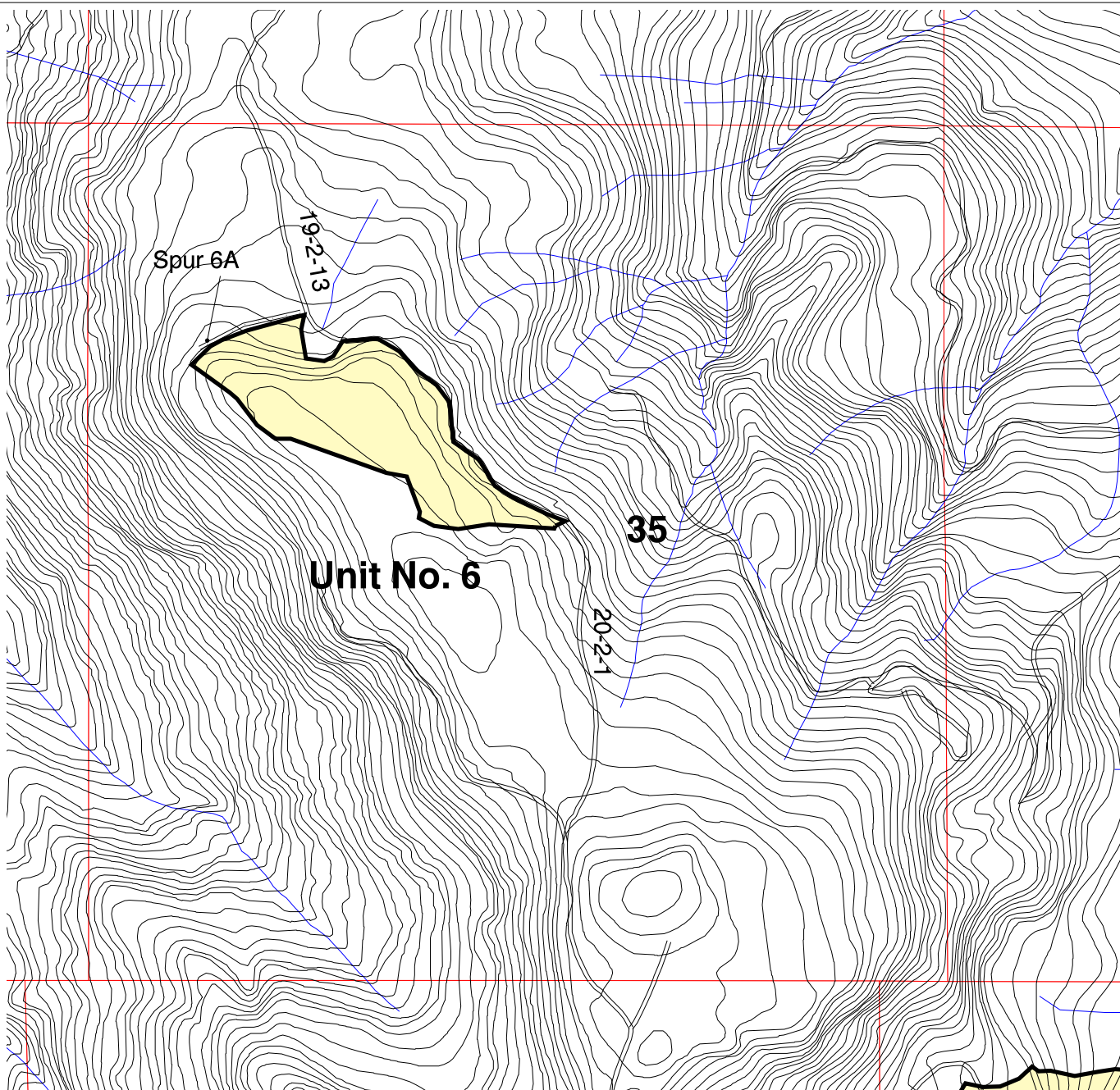
11 Acre Thinning

Alternative No. 1 - Proposed Action 2000 Timber Sale Unit No. 5

T.19S., R.02W., Sec. 23

- Contour
- Existing Roads
- Streams
- 2000sales
- Property Lines

1000 0 1000 2000 Feet



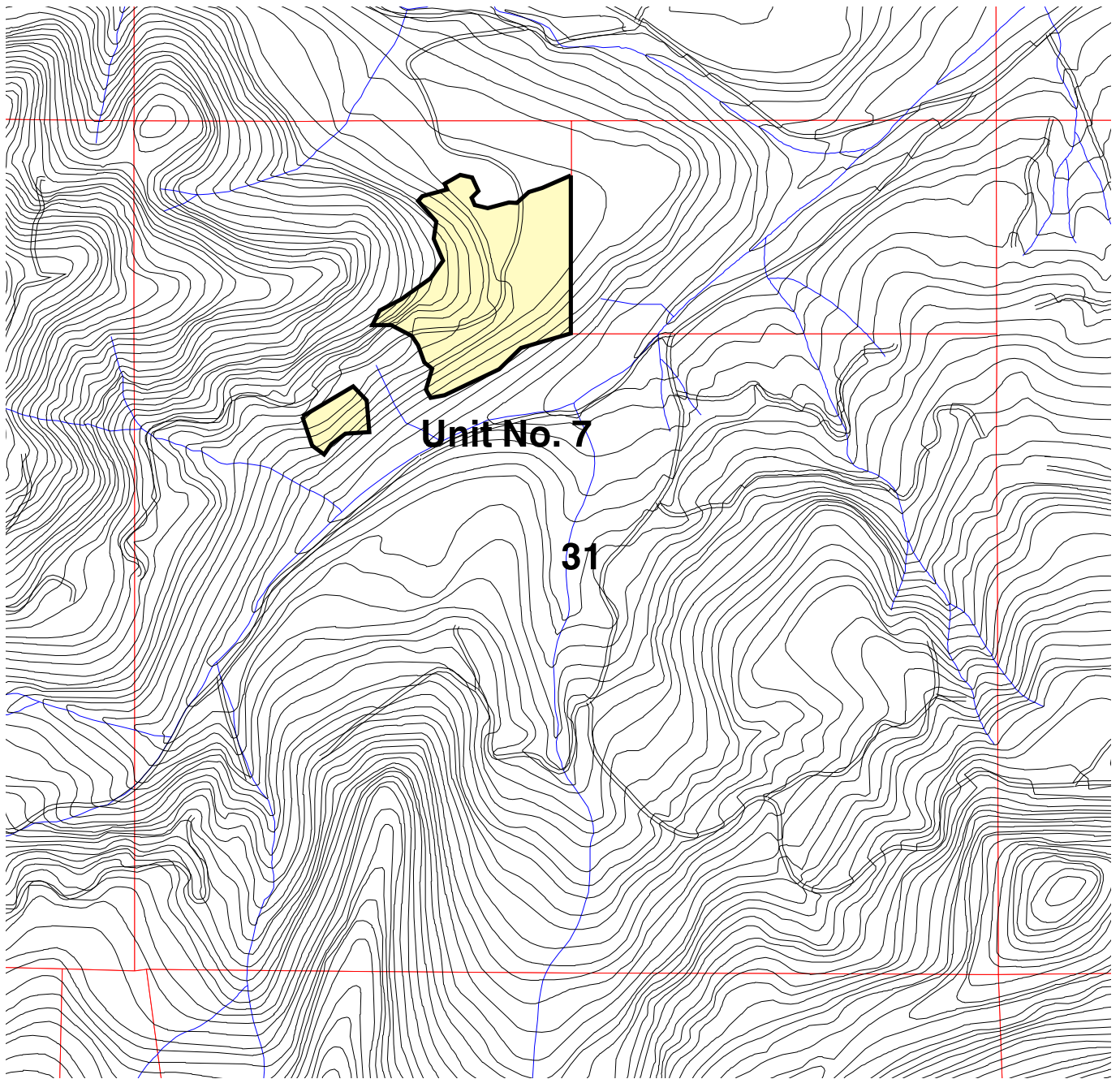
24 Acre Thinning

Alternative No. 1 - Proposed Action 2000 Timber Sale Unit No. 6

- Contour
- Roads (Proposed)
- Existing Roads
- Streams
- 2000sales
- Property Lines

T.19S., R.02W., Sec. 35






1000 0 1000 2000 Feet




Unit No. 7, 15 Acre Regen.

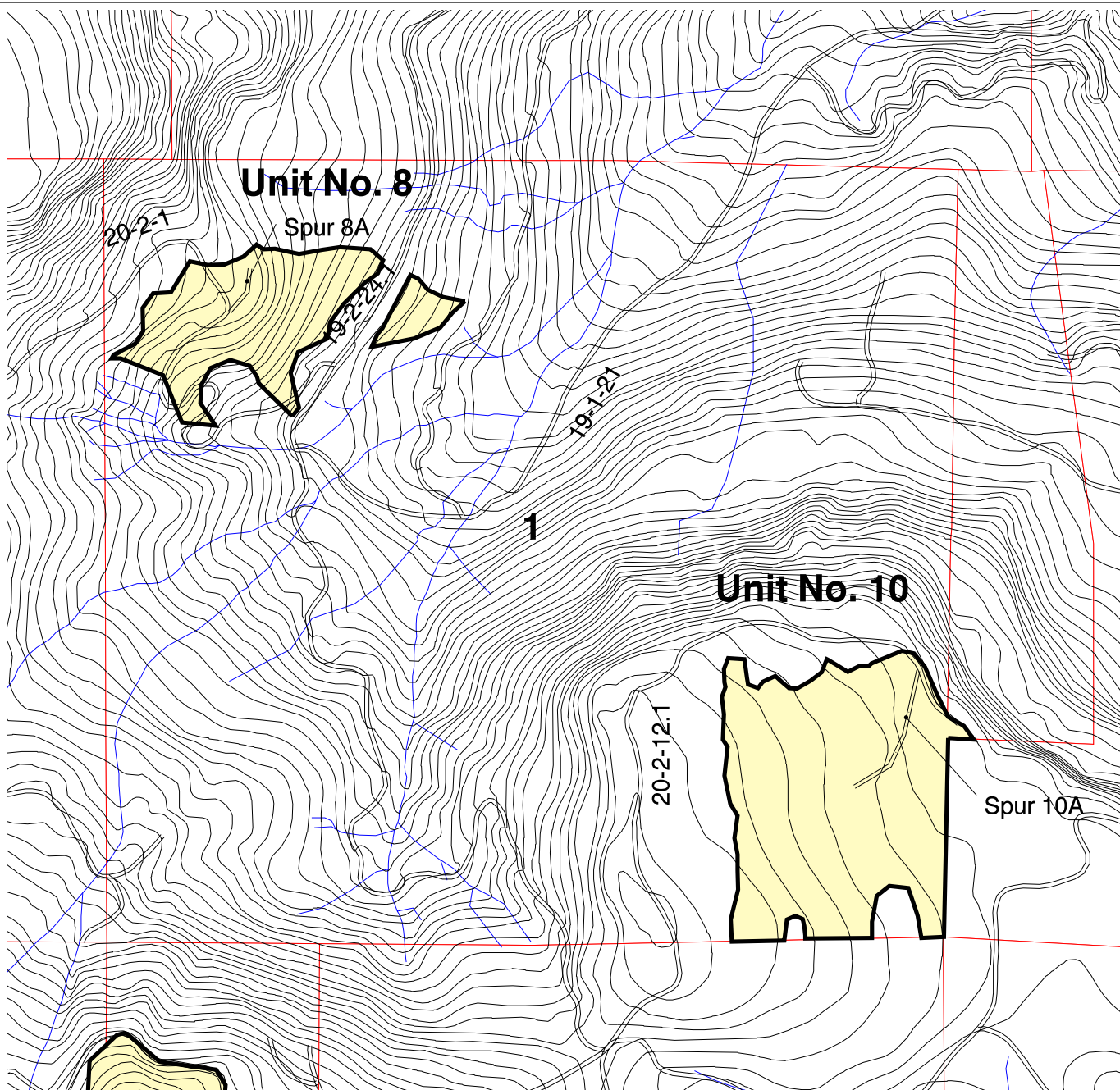
Alternative No. 1 - Proposed Action
2000 Timber Sale
Unit No. 7

T.19S., R.01W., Sec. 31

-  Contour
-  Existing Roads
-  Streams
-  2000sales
-  Property Lines

1000 0 1000 2000 Feet












Unit No. 8, 21 Acre Thinning
Unit No. 10, 43 Acre Thinning

Alternative No. 1 - Proposed Action 2000 Timber Sale Unit Nos. 8 and 10

T.20S., R.02W., Sec. 1

-  Roads (Proposed)
-  Contour
-  Existing Roads
-  Streams
-  2000sales
-  Property Lines

1000 0 1000 2000 Feet



Aquatic Conservation Strategy Objectives

Forest Service and BLM-administered lands within the range of the Northern spotted owl will be managed to:

1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations, and communities are uniquely adapted.
2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include flood plains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.
3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.
4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.
5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.
7. Maintain and restore the timing, variability, and duration of flood plain inundation and water table elevation in meadows and wetlands.
8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distribution of coarse woody debris sufficient to sustain physical complexity and stability.
9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.

**UNITED STATES DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT
EUGENE DISTRICT OFFICE**

Finding of No Significant Impact
for
Lost Creek Analysis Area

Determination:

On the basis of the information contained in the attached Environmental Assessment, and all other information available to me, it is my determination that implementation of the proposed action or alternative will not have significant environmental impacts not already addressed in the *Record of Decision (ROD) for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (April 1994)* and the *Eugene District Record of Decision and Resource Management Plan (June 1995)*, with which this EA is in conformance, and does not, in and of itself, constitute a major federal action having significant effect on the environment. An impact statement is not necessary and will not be prepared.

Field Manager, McKenzie Resource Area

Date: _____